Small Business Innovation Research/Small Business Tech Transfer

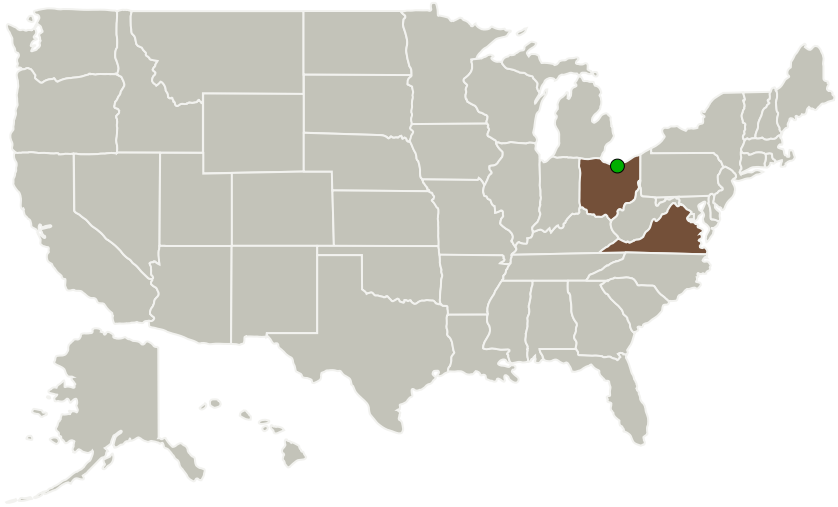
Miniaturized Air Dropped Sensors for Environmental Monitoring of Heavy Metals in Water, Phase I

Completed Technology Project (2016 - 2016)

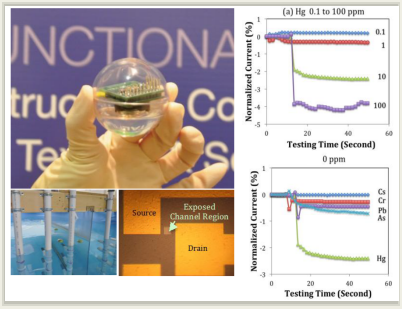
Project Introduction

This NASA SBIR program would develop air-dropped wireless networked sensors using miniaturized chemical field effect transistors (ChemFET) for the detection and mapping of heavy metals in water for ecosystem monitoring. We would combine our advanced nanotechnology thin film deposition process - Electrostatic Self-Assembly (ESA) - and strained nanomembrane ChemFET technology to produce a wireless sensor network for in situ environmental monitoring. The nanomembrane structure combined with NanoSonic's patented self-assembly processing approach allow a unique way to tune sensitivity and selectivity. The wireless sensor system would be capable of sensing multiple heavy metal materials, improve upon conventional sampling methods in terms of cost, sensitivity, and selectivity, and benefit future environmental analysis programs. NanoSonic has demonstrated a prototype wireless chemFET sensor node for heavy metal detection.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Nanosonic, Inc.	Lead Organization	Industry	Pembroke, Virginia
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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Primary U.S. Work Locations	
Ohio	Virginia

Project Transitions

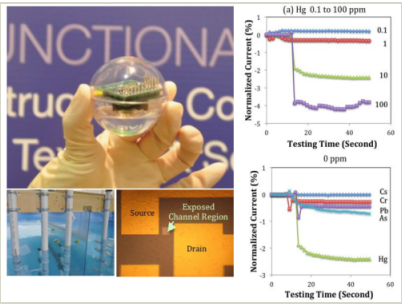
June 2016: Project Start

December 2016: Closed out

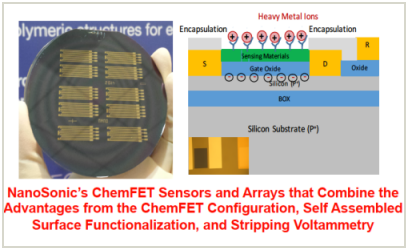
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139935)*

Images



Briefing Chart Image
Miniaturized Air Dropped Sensors for Environmental Monitoring of Heavy Metals in Water, Phase I *(https://techport.nasa.gov/image/129959)*



Final Summary Chart Image
Miniaturized Air Dropped Sensors for Environmental Monitoring of Heavy Metals in Water, Phase I Project Image *(https://techport.nasa.gov/image/130921)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Nanosonic, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

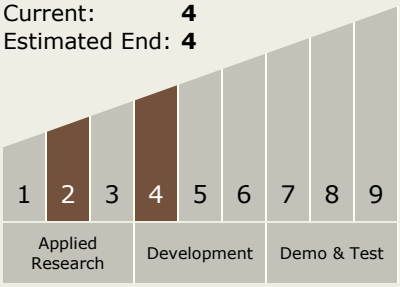
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Yuhong Kang

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System